SHF Communication Technologies AG

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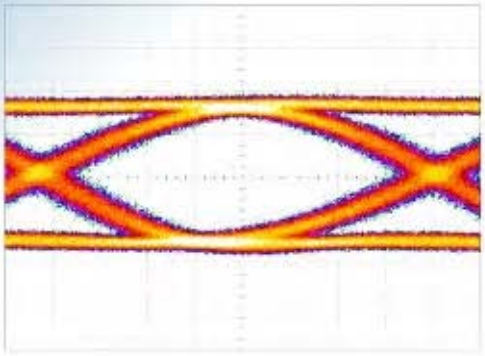
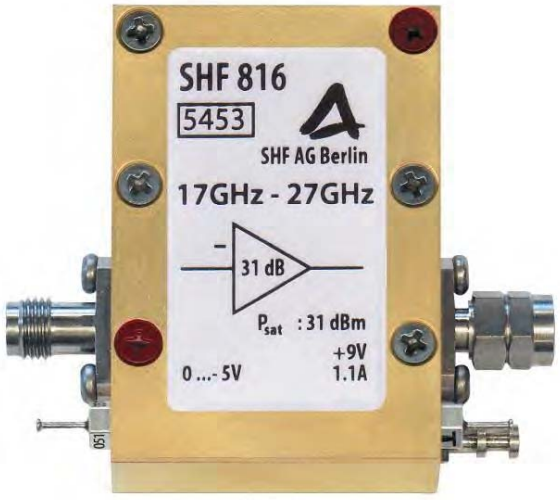


Datasheet

SHF 816

Power Amplifier



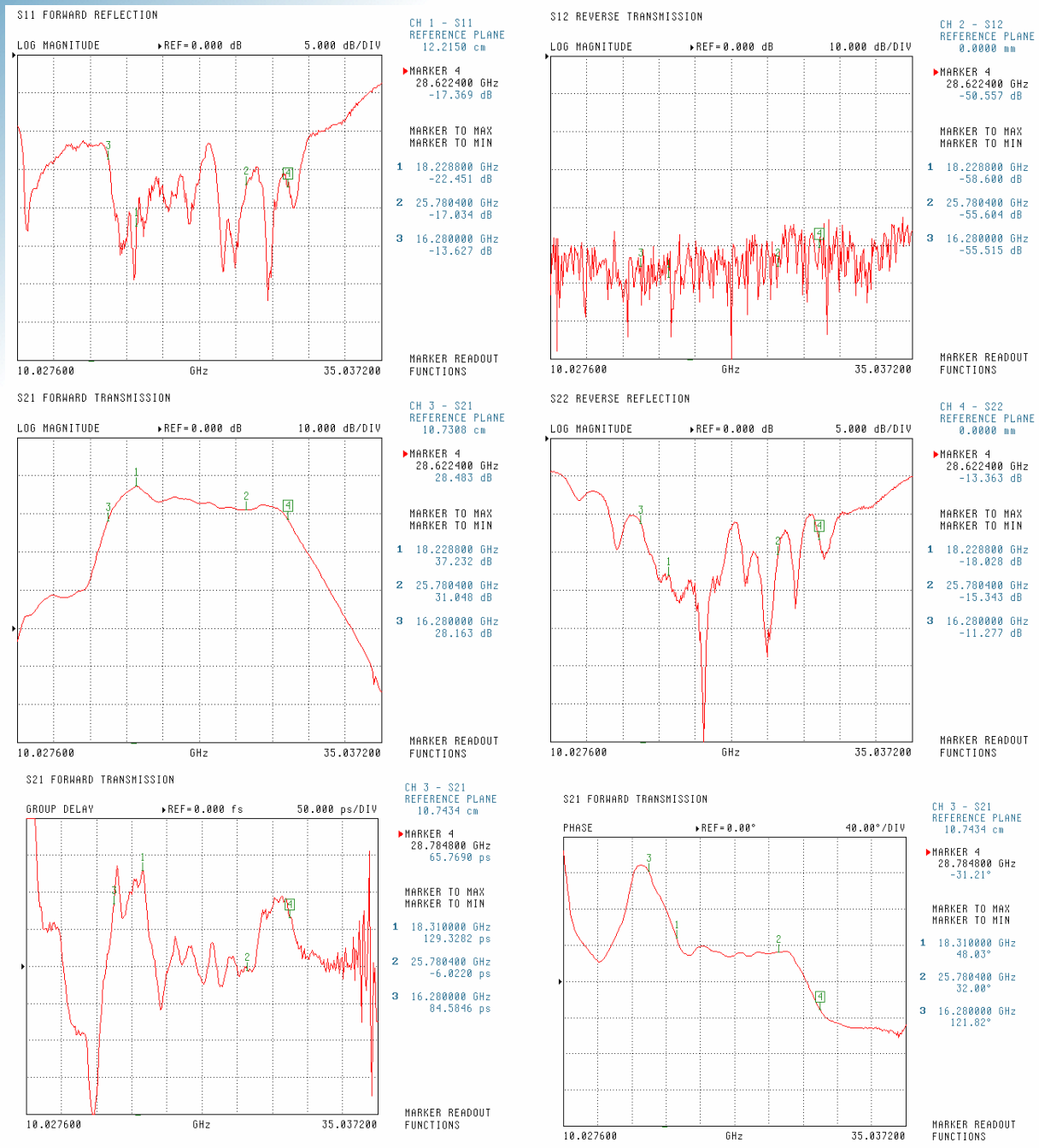
Specifications – SHF 816

Parameter	Symbol	Unit	Min	Typ	Max	Conditions
High frequency 3 dB point	f_{HIGH}	GHz	27			
Low frequency 3 dB point	f_{LOW}	GHz			17	
Gain	G	dB	31	32		inverting
Gain control voltage	U_{gc}	V	0		-5	reduces gain by more than 3 dB[1]
Output power at 1 dB compression	P_{01dB}	dBm (V)	29 (17.8)	30 (20)		>17.5GHz <27GHz
Output power at 2 dB compression	P_{02dB}	dBm (V)	30 (20)	30.5 (21)		>17.5GHz <27GHz
Output power at 3 dB compression	P_{03dB}	dBm (V)	30.5 (21)	31 (22)		>17.5GHz <27GHz
Input return loss	S_{11}	dB			-10	>17GHz <27GHz
Output return loss	S_{22}	dB			-10	>17GHz <27GHz
Maximum input power		dBm		4 10		in operation without power supply
Supply voltage	U_s	V	9		10	1.1 A, reverse voltage protected
Power consumption		W	9.9			using 9 V supply voltage
Input connector						K (2.9mm) female[2]
Output connector						K (2.9mm) male[2]
Dimensions (LxWxH)		mm				51x35x13.5 excluding connectors

[1] large signal gain – see page 4
[2] other connectors available on request

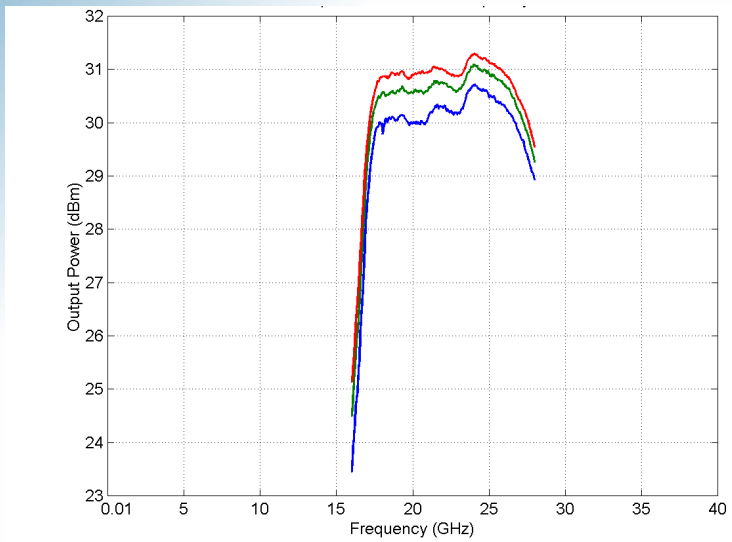
The SHF 816 has a three stage amplifier design using special monolithic microwave integrated circuits (MMICs) inside special carriers to achieve low noise performance. The custom made MMIC carrier is optimized for good input return loss between its interior and the 50 Ohm outside hybrid technology. The computer optimized broadband circuit is specially tuned for maximum output power and gain. A voltage regulator IC makes the amplifier insensitive to reverse voltage and line ripple.

S-Parameters, group delay and phase response at maximum gain



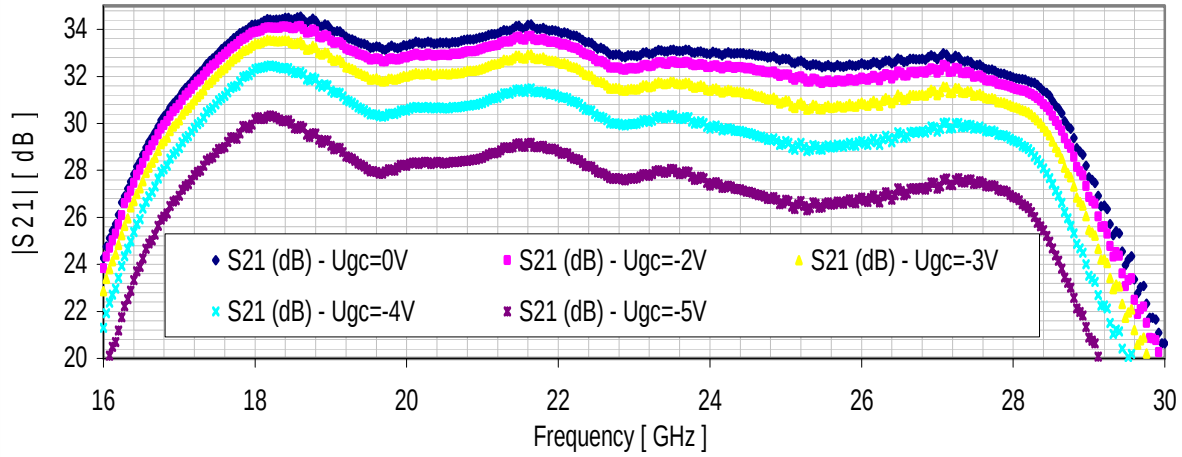
Aperture of group delay measurement: 81 MHz

Saturation power

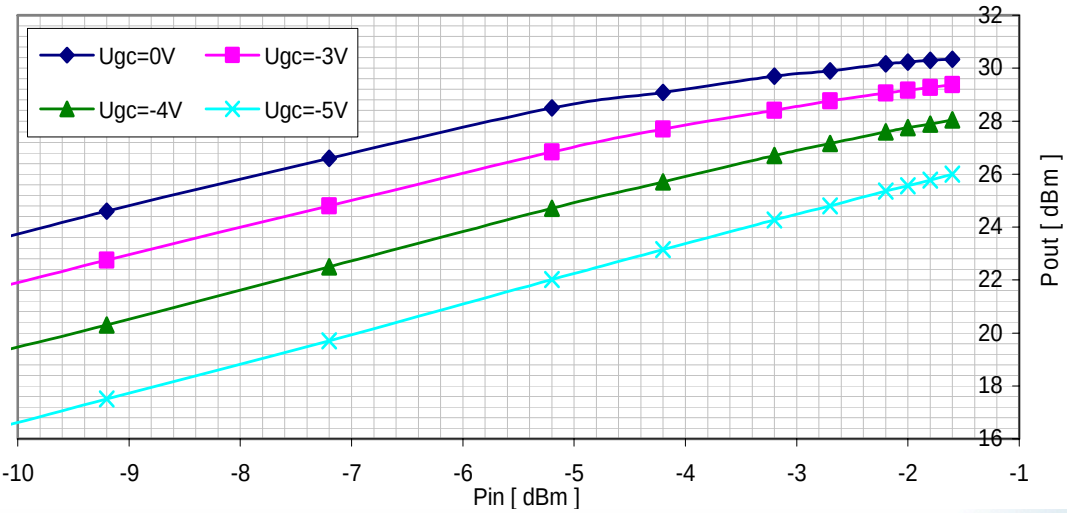


Top (red): 3 dB compression; Middle (green): 2 dB compression; Bottom (blue): 1 dB compression

Gain reduction function



S_{21} measured at different gain control voltages. Power in = -2dBm



Output power vs. input power at different gain control voltages. Measured at 20GHz

Available Options

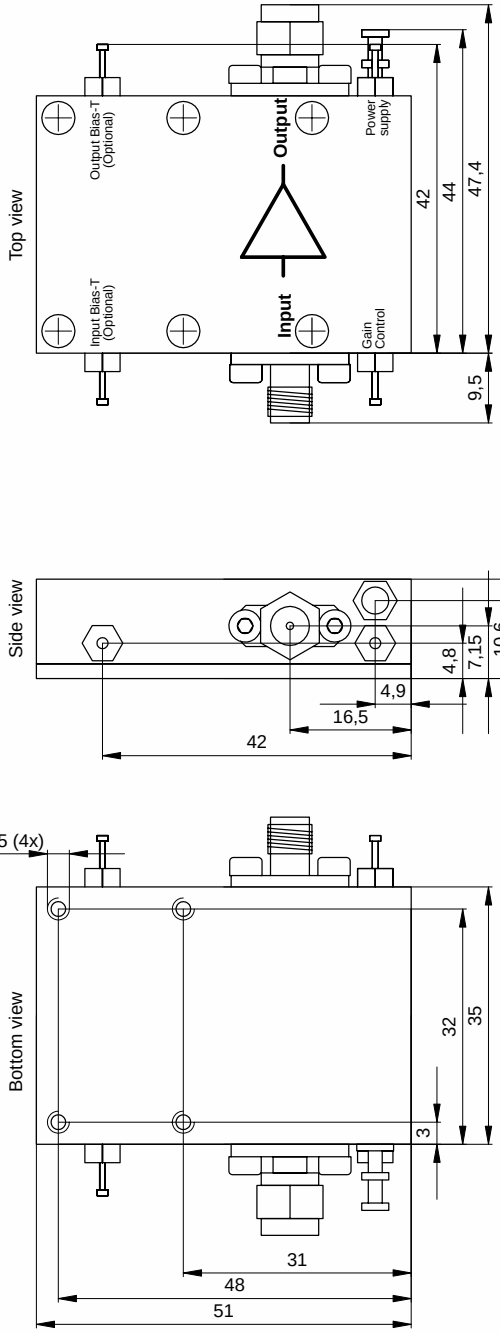
01: DC return on input

02: Built-in bias-T on input

03: DC return on output

04: Built-in bias-T on output

The following options cannot be combined:
01 and 02
03 and 04
02 and 04



User Instructions

ATTENTION !

Electrostatic sensitive GaAs FET amplifier

1. To prevent damage through static charge build up, cables should be always discharged before connecting them to the amplifier!
2. Attach a 50 Ohm output load **before** supplying DC power to the amplifier!
3. The supply voltage can be taken from any regular 9…10V, 1.1A DC power supply and can be connected to the supply feed-through filter via an ON / OFF switch.
4. The minimum supply voltage is 9V. A higher one increases the power dissipation of the internal voltage stabilizer.
5. Using a 3 dB or 6 dB input attenuator will result in a 6 dB or 12 dB increase of the input return loss. For minimal degradation these attenuators should have a bandwidth specification of >40 GHz (K/ 2.9mm attenuators)!
6. An input signal of about 0.5 V_{pp} equivalent to -2 dBm will produce the full swing output of 20 V_{pp}
7. We recommend that the amplifier be used in conjunction with a 50 Ohm load. Use of a reflective load for extended periods should be avoided.
8. The input voltage should never be greater than 1 V_{pp} equivalent to 4 dBm input power.

   The input voltage without DC power supplied to the amplifier should never be greater than 2 V_{pp} equivalent to 10 dBm input power.